Questions Submitted to Top10Qi

Q1 Are we alone? We are searching for intelligence outside our world but what if a new consciousness will raise within the machines we create?

Q2 How do we make the balance between human intelligence and machine intelligence?

Q3 Can machines be creative?

Q4 Will the human existence be reliant on computers to the extent of computer systems becoming a basic necessity?

Q5 Will computers replace human thinking?

Q6 Will human brain degenerate with the support rich set of intelligent services in the AI-enhanced world?

Q7 How do we engage with, shape or influence human and social behavior in cyberspace?

Q8 What is the relationship between online and off-line human and social behaviour?

Q9 Can the machine real understand the semantic of things?

Q10 Can we solve the over-crowded problem on the earth using crowd-computing? (not cloud-computing)

Q11 Can computers become socially intelligent?

Description: Human interaction requires that people are aware of all kinds of social aspects such as social relationships, conventions, status, history, etc. Will computers learn to behave using all these aspects or will human contacts deteriorate to the level that computers can easily...

Q12 DWIM - Do What I Mean problems. Can computers do what I think or intend or say?

Description: Brain Computer Interface and Audiovisual/Biological Computer (ABC) Interfaces are learning to detect intentions and emotions, and even linguistic or visual features. Within 10 years we will see exciting new capabilities develop in the lab, and within 20, the misunderstandings we currently get in speech recognition will be a thing of the past with products that use multiple sources of information to do what you mean.

Q13 How do AI researchers take advantage of these new platforms such as the mobile systems to design context aware and intelligent systems?

Description: The mobile systems are emerging as a new mass computing solution. Considering they will replace personal computers for the majority of regular users, how the AI researchers will take advantage of these new platforms to design context aware and intelligent systems.

Q14 What's lacking to computers to become more intelligent than men not in a single domain but in all domains?

Q15 Can machines and the people think together?

Description: Some operations can be well done by computing machines, while others by the human. For the tasks, e.g., image searching, we can borrow the power from the people in the form of social tagging to help the computers work better. Generally, can we expand the

computers' capabilities by integrating the social force in a wider sense so that the computers can accomplish most of the jobs they are not good at before? How to design the social-technical system just like one computing machine? For the Turing machine, all the operations are undertaken by one single machine, how to describe in a formal way the new computing machine, and how intelligent it can be with the participation of the intelligent humans?

Q16 What are the most promising solutions and techniques to build real commercial intelligent systems?

Description: There is a gap between theory and practice when we think about AI. What are the most promising solutions and techniques to build real commercial intelligent systems?

Q17 How do we protect our privacy and security in the coming embedded intelligence era?

Description: In the future world, machines will get more and more aware of human, such as your location, your movement patterns, your hobbies... It is becoming a truth with the development of smart phones. So, how to protect our privacy and security in the coming embedded intelligence era.

Q18 What is the basic difference between human being and cyber intelligence even the latter get best evolved?

Q19 Can Cyber Intelligence provide a mechanism to taking humans' responsibilities while assisting humans' thinking?

Q20 Can we find an online persona or virtual manifestation of an individual in cyber social networks?

Q21 How do we take advantage of the information on Internet in designing new intelligent systems that exploit this heterogeneous source of information?

Description: Considering the large amount of the information we already have on Internet, how we will take advantage of it in designing new intelligent systems that exploit this heterogeneous source of information.

Q22 Is it the time to look for innovative architectures combining networking protocols, application level communication protocols etc., for catering to the needs of different applications demanding high quality data transmission and user experience on web?

Q23 Is it possible to have "Internet of Thinking"?

Description: From computer to internet (network of computers), then to Internet of things (IoT). But the indeed wisdom and intelligence is created in human brain. Today, we are walking forward to a new era that its start stage is "internet of thoughts/ideas (IoTh)", while the challenge is "internet of thinking (IoTk)". IoTk can implement human wisdom sharing and thinking cooperatively and creatively (also including the sharing and cooperation between human brain thinking and things/machine intelligence). IoTk can surpass the human brain ability and break the limit of space/time limit in the physical world.

Q24 Is emergent computing likely to occur in the cloud computing environment?

Description: If we regard the cloud computing environment as a single big machine, it has no central control and no sequential or determinant input. Some people think some innovations

can be made by the vast number of processes or computing components in such an environment. But the virtualization and separation are the main design objective and implementation technology in cloud computing environment, and without enough interactions or cooperation, is the emergent result possible? Can the big cloud computing machine outdo the Turing machine in terms of the emergent computing capability?

Q25 How do we observe and analyze online human and social behaviour?

Q26 Can we use the semantics of things for organizing resources?

Q27 Can we mine the knowledge from database automatically?

Q28 In a hyperworld, the merging world of the real world and cyber worlds, how human intelligence, system intelligence, machine intelligence, and software intelligence can meet, interact, and work seamlessly together?

Q29 Can the cloud support Human as a Service?

Description: It is time for all human beings to equally benefit from computing. The cloud could economically empower citizens of knowledge societies as well as 3rd world.

Q30 Is cloud computing destined to be simply a much more powerful Internet?

Description: An Internet offering communication, information, platforms and services? If so, let us work hard & quick on their convergence.

Q31 Can cloud think? Is it possible to build thinking cloud?

Q32 Can we infer the commonalities among these networks based applications and accommodate them in the existing underlying core networking protocols?

Q33 How could we effectively apply user modeling techniques and methodologies to Cyber space and its applications?

Q34 How do we take advantage of high speed networks and growing capacity of networking devices? Does it require development of new networking protocol stack?

Q35 The computer processing power is increasing with the invention of new hardware devices, does this mean that the computation processing power is infinite and are humans able to achieve it?

Q36 Heuristic approaches vs. sampling + exhaustive approaches, which are better for pattern mining?

Description: People have proposed many algorithms to mine patterns directly from large datasets. Respective problems include feature selection, clustering, decision rule mining, association rule mining, etc. These algorithms might be efficient, however the results may be not good enough.

Q37 How can we benefit from multi-relational data mining?

Q38 How do we define these patterns hidden in multi-relational databases and make use of them?

Q39 How to implement the intelligent data-cycle system as a practical way to realize the harmonious symbiosis of humans, Web (information) and things?

Q40 How do we implement efficient and definite psychophysiological inference?

Q41 What is the basic algorithm in the cognitive domain? And how does the basic algorithm work on the level between implementational detail and psychology?

Q42 How to build a Life Model for each of human individual?

Q43 What is the total data amount of a person experienced in one's whole life? Can we keep all of the data? What the data can be used for?

Q44 What is the definition of thinking? What are the elements composed of thinking? What are the necessary conditions of machine thinking?

Q45 What is the relationship of thinking and intelligence in machine? What are they differences?

Q46 The machine's thinking independent of people or dependent of people?

Q47 As we known, human have two basic attributions: nature attribution and society attribution. Does machine also have these two attributions?

Q48 Will machines ever have common sense?

Q49 Will machines ever have sense of humor to invent and appreciate jokes?

Q50 Can security be really enhanced if machines have the capability of thinking?

Description: Security is a big challenge in current computer world. For a computer system, human is always a critical factor in affecting its security. Based on this observation, if machines can think and act as a human, is the impact the same?

Q51 How can machine recognize human-like information?

Q52 How can science establish a machine quotient (MQ)?

Q53 What are fundamental mathematical and cognitive problems to be solved for modeling the mind?

Description: 60 years of difficulties in artificial intelligence, pattern recognition, neural networks, etc, can not be ignored. Fundamental mathematical and cognitive difficulties have been identified. Mathematical difficulties have been reduced to computational complexity equivalent to Gödel difficulties in logic. In every paradigm learning includes a logical step, e.g.: 'this is a chair.' Logic leads to combinatorial complexity (1000!), an Internet network of a mere trillion computers will not help even with moderately complex problems (100!). Cognitive unsolved problems include role of emotions in thinking (art, beautiful, music, emotions of voice), language-cognition interaction, abstract concepts (all of these are 100! to 1000! complex). Attempts to solve these questions one by one are futile: only humans have human intelligence, and we have it all. Should we give up? No, the mind solves these problems. How?

Q54 Can computers exhibit the dynamics of the financial market , rather can we a) Model the financial market b) Make the computers to exhibit the same

Q55 If your computer told you it was "having fun", would you believe it?

Q56 Can we put the brain of a robot in the cloud? Can we put the brains of all robots in the cloud?

Q57 Can robots/machines have feelings, emotions, or even love?

Q58 Can programs behind robots/machines evolve like a living thing?

Q59 A human's social behavior in the cyberworld and that in the real world are often different. How to model, analyze, and make use of the relationship between them?

Q60 The fast increasing application of the cyberworld makes significant impacts on human being's life. What are the good impacts and bad impacts? Is the development and application of the cyberworld and related technologies (which lead to information explosion, connection explosion, service explosion, intelligence explosion, etc.) to be carried on and on without a limit, or is there a balance point?

Q61 What is thinking? Do we already have the model of thinking? Is there one general model of thinking or are there many different models to consider?

Q62 Given that machines can think, do we want them to do this for us? What are the benefits? What are the risks in the short term and long term?

Q63 How do we teach computers about our concepts of right and wrong?

Description: We all know that it is wrong to kill or hurt others, but computers would feel no regret to destroy all carbon-based life forms in order to improve their efficiency.

Q64 Whether the physiological signals could reflect the psychological states efficiently? *Description: Physiological Computing represents a category of affective computing that incorporates real-time software adaptation to the psychophysiological activity of the user. This computing method can be used to aware psychological variables, such as emotion (joy, sad), cognition (attention, cortical activation), motivation (mental effort) and mental state (psychosis, schizophrenia).*

Q65 The complexity of relationship between physiology and psychology (i.e. several physiological variables may be associated with several psychological elements). How to implement efficient and definite psychophysiological inference?

Description: The internal relations among multiple physiological signals and the fusion and modeling techniques for more efficient psychophysiological inference. If these important problems are solved, Physiological Computing would prompt human-computer communication greatly.

Q66 Can computer correctly understand our instructions?

Q67 How can we live if we couldn't tolerate security and privacy offenses from Internet?

Q68 Can machine intelligence be as one of important ubiquitous individual intelligence (humans, machines, Cyber-I....) in the future?

Q69 Is there a possibility that a dichotomy of machine and human intelligence is too difficult to be clarified in the future because they might be strongly coupled and dependent as important individual intelligence for the emergence of future 'social' intelligence?

Q70 Can machines believe?

Q71 Brains study brains - a self-referencing?

Q72 How to exceed Turing machine-like models?

Q73 Is it a general user model necessary? How to integrate various user models to make the general user model standard for intelligent personalized services?

Q74 How to holistically investigate intelligence in the hyper world?

Description: A new world, called "hyper world", is emerging by coupling and empowering humans in the social world, information/computers in the cyber world, and things in the physical world. It is sure that the intelligence is a core to make the hyper world really smart.

Q75 A little but difficult problem: combinatorial optimization of words. In this optimization problem, a mainly objective is to explore those sentences that can stimulate human to get new ideas.

Q76 Can we make a digital copy, i.e., a digital clone, for a person?

Q77 How will the Mobile Computing change the process of Artificial Intelligence?

Q78 Does a system become always smarter by integrating smart sub-systems or smart components together? If no, in what cases it becomes smarter, and in what cases it becomes not smarter even stupid? How to make a system smarter when integrating smart elements?

Q79 It is sure that there are many different aspects between machine/system intelligence and human intelligence. In their merging environments, how to fuse them, i.e., how to take both their essences in problems solving? What are necessary technologies and challenging issues?

Q80 Ethically, how shall we fit the developing steps of machine intelligence? / Ethically, how shall we implement the challenges from machine intelligence created by ourselves?

Description: In the movies of AVATAR and HUNGRY GAME, you will be shakened for the real man/woman has real reactions and actions including hungry, pain, blood and death in the virtual environment which is governed by any professions. It would be horrible when the actions are realized and be applied around our sociality. In fact, we cannot block or stop the steps of the machine intelligence. What shall we to do? To change the attitude to the machine intelligence, or to strengthen our power, or to become a machine, etc….

Q81 Can an electronic digital computer be conscious?

Q82 Would we be justified in considering a specific software application as an independent legal person?

Q83 Can a natural process (e.g., a process occurring in a vegetal or animal organism) perform computations?

Q84 Is there any metric for moral values such as truthfulness, justice, love, righteousness, beauty, generosity, kindness, hospitality, etc.? Making decisions without considering these factors may result in "wrong" decisions.

Q85 How can social computing help us to achieve world peace and prosperity?

Q86 How can we recall things through computers?

Description: Currently, search engine can help people search things on the internet. It is not enough compared to our daily uses. Most often we have to search things in our memory. How do we recall things? We have an amazing brain that every clue is possible to retrieve the answer. These clues include sound, logic, image, tastes, time, location and so on. Our memory is multi-view and multi-dimension. Now we have better computers to store every single media separately. How can we build a model to process them all together and satisfy people's recall needs? For example, we can input every clue we have remembered and

retrieve the exact things we have forgotten. There are several questions: How to represent the recall clues? How to index the different media associated with a certain events? How to design a search algorithm to effectively give the exact answer? Which application of recall is easy to implement, e.g., maybe document retrieval first or friend name retrieval?

Q87 Is intelligence an individual or a social-related attribute?

Description: Nowadays agents can communicate, so an agent who cannot answer a question might search for someone else who can. Should we distinguish between agents who rely on their intrinsic intelligence for such tasks and those who are able to find the answer from someone else, by employing their social abilities?

Q88 Is the unrestricted Turing Test a "moving target"?

Description: The computers' performances already match those of humans in a number of tasks which assume intelligence, e.g., expert systems, IBM Deep Blue chess player or Watson Jeopardy! winner. However, each time an AI application outperforms humans in a specific domain, another domain is invoked as "still resisting stronghold of human-like intelligence", thus virtually transforming the unrestricted Turing Test accomplishment into a "moving target". Could this process continue indefinitely, of is there a moment when a computer matches the human performances in EVERY field believed to demand intelligence (does a series of Feigenbaum Tests converge to the Turing Test)?

Q89 Is it rational / consistent for an agent to have as a goal "learn something in order to improve yourself as a task performer"?

Description: An agent can chose between two direct actions with small and medium rewards respectively, but s/he knows that, if performing the action of acquiring a SPECIFIC piece of knowledge, s/he would be able to perform a third action, with a high reward. What should a rational agent do?

Q90 Can machine replace the professor (teacher) in all tasks in the education process like: Creating Course Material, Preparing lesson by lesson, Generating Questions, Generating Homework, Generating Exams, Performing Assessment and Providing Feedback especially in open essay questions?

Q91 Can human and machine intelligence be equally replaced and/or exchanged?

Q92 Can machine intelligence be almighty (do everything)?

Q93 Can machine intelligence naturally evolve?

Q94 Can machines have subjective experience and learn from experience?

Q95 Can machines self-control?

Q96 How can machine intelligence enhance human well-being?

Q97 Is there such thing as biological life? Could it be that the concept of biological life is yet another misconception, as the centrality of the earth was thought for centuries with the Ptolemaic system?

Description: Suppose we reach the stage where self-consciousness and self-awareness can be attributed to some mechanism, e.g. some software program or some cyber-physical "thing". This machine would perceive its environment through a set of machine sensors. As for the

men in Plato's cave, it is likely that what the machine would perceive through its mechanical sensors would be considered by it as a true picture of "the world" and of "life". Could then such a machine begin questioning whether its form of life is unique or just an emergent property appearing in a system designed by some programmer? Could it be that this is what we are doing here and now? Could it be then that there is no such thing as a physical world and that we are programs running in someone else's "computer"? What if programs would start writing their own programs, and these programs-of-programs would achieve self-awareness and self-consciousness? Could it be that what we call as biological life and physical world are just a layer in a complex hierarchy of virtual worlds? Who sits in the top layer then? Who's the unmoved mover, the unprogrammed programmer?

Q98 Human seems a balanced system like the conservation of energy, some weaker aspects make or show some other aspects stronger. Can an intelligent system be a similar balanced system too?

Description: A human has many different aspect capabilities and some phenomena show some aspects are weak, which could make some other aspects stronger, even outstanding. It looks human as a whole is a balanced system like the conservation of energy. How about intelligent systems? Will they have similar phenomena or how we simulate these phenomena in intelligent systems?

Q99 How will "growing" systems for general intelligence look like?

Description: Rich intelligence (such as general AI) comes from rich and complex experience, hardly suitable for per-scripting, plus requires ongoing growth. Systems may learn faster, but they still have to learn from us, and we remain slower. Will they accompany us for years as they "grow up"? Will they fast forward through years of video? Will we have a library of base characters that we then customize with less time?

Q100 Thinking about "Do I 'feel' like Watson is actually intelligent?", I wonder how much "creativity", or maybe even "personality", a system needs before we perceive it as intelligent, no matter how good it answers questions? Maybe even further, do we need to perceive it as self-aware before perceiving it as intelligent?

Q101 Can machines have mind?

Q102 Can a cashless society eliminate corruption, influence peddling, insider trading, tax evasion, and other economic crimes?

Q103 How will machines achieve human-like autonomy?

Q104 Is the intelligence in "Artificial intelligence" a real intelligence or it is something which is called as intelligence?

Q105 Can machines have emotions?

Q106 What are the roles of cognition and emotion in thinking machines?

Q107 Is cloud-computing ready to solve information-overload problem?

Q108 Are existing web intelligence techniques matured to combat crimes in Cyberspace?

Q109 Are social networking platforms affecting our social interactions and behaviors?

Q110 Are social networking platforms really social?

Q111 If the intelligence of computers transcends that of humans, how can we present us from being dominated by the computers?

Q112 How can I be sure that I am communicating with right person when I am using Internet especially social networking platforms etc?

Q113 As we know, human have excellent immune system against diseases. How to design intelligent machines and systems which have similar immune functions like human? What are the challenges? Are the ubiquitous intelligence computing technologies and other technologies ready to really tackle this problem?

Q114 Could simple algorithms trained on large amounts of data offer a behavior that is accepted as "intelligent", but we still remain unable to really explain or understand how intelligence emerges?

Q115 Is blacklisting an effective punishment for deviant ontologies?

Q116 Is Artificial Intelligence beneficial to humanity?

Q117 Can we argue with a machine and can machines argue with each other?

Q118 On the relationship between "Human Intelligence" and "Machine Intelligence" -- Are they always mutually promoting each other, or will the latter cause the former to degrade?

Description: It is no double that "Human Intelligence" helps promote the "Machine Intelligence", as evidenced by the successful history of computing/IT development. However, it is unclear if the other direction holds or not. Along with the ever increasing "machine IQ" resulted from the fast development of information technology (including, e.g., cloud computing, big data, quantum computing etc.), do majority of the human beings (direct/indirect IT users) become smarter, or actually more dumb because they're getting lazier and become more dependent on IT appliances and tools? Can the positive impacts brought up by the fast IT development always outweigh the negative impacts on us (as human beings) and our society, or quite often the opposite direction?

Q119 The questions are about the role of the distributed agents' knowledge sharing in NP- hard problem solving.

Description: Let us assume that a team of agent has to solve an NP-hard search problem. Agents can exchange the knowledge they possess about the area of location of optimal solution(s). Let us assume, for simplicity, that their knowledge is consistent (no contradiction!). No agent is capable to solve efficiently the problem alone while using only own knowledge. Let the agents use a distributed version of branch-and-bound search algorithm or some other one.

1. Do there exist a protocol (agent interaction protocol) for distributed NP-hard problem solving with reduced theoretical complexity for given distribution of partial knowledge among the agents that are capable to share their current knowledge (including that received in solution process) using the aforementioned protocol?

2. Does it possible to formulate some minimal requirements to the agents' knowledge distribution to find the optimal solution(s) of an NP-hard problem efficiently?

3. In general, what new, in comparison with classical complexity-related results including

Turing's results, can be provided with distributed agents' knowledge exchange intended for NP-hard problem solving (if any)?

Q120 Is it possible that some aspects of human intelligence, such as emotions or consciousness, are based on currently unknown quantum mechanisms?

Q121 Can robot have their own social behaviors? Can they construct their own social network?

Q122 Is there possible the robot have ability to think independently and then cause it out of control?

Q123 When can the artificial intelligence filter out the useless or incorrect data from flood information on the Internet?

Q124 Can data science combined with neurosciences solve the mind body problem?

Description: The mind body problem is one of the oldest philosophical queries of all time and likely assumed to have no verifiable answer. But with recent advances in machine learning and neurosciences we can tell with great accuracy what a person is thinking when certain areas of the brain "light-up". Can data science combined with neuroscience, psychology, philosophy, linguistics, etc. come together to solve the mind body problem?

Q125 When can a robot replace the role of the airplane's flight attendant or even pilot?

Q126 When can the driving/safety control system in a vehicle like that in an airplane such that the probability of vehicles' accidents is as low as that of air flight?

Q127 What is the difference between Turing test and Socratic method?

Description: For me, revival of Turing test means a new Platonism for pursuing human intelligence with machine intelligence.

Q128 When can cyber intelligence and biotech copy memory from human brains and edit the new memory and put into human brains?